



September 5, 2000

Channel Islands National Park
Attn. Superintendent
1901 Spinnaker Dr.
Ventura, CA 93001

Dear Mr. Setnicka:

The Ventura Audubon Society has reviewed the DEIS for the Anacapa Island Restoration Project. We agree with the objective of this program, eradicating rats from Anacapa to help restore seabird populations, but we have some questions, concerns and comments regarding the techniques and rodenticides employed. Our responses are listed categorically here.

Channel Island	
_____	Supt.
_____	Admin.
_____	Cult. RM
_____	Interp.
_____	Maint.
_____	Nat. RM
_____	Protection
_____	Transp.
_____	Marine Sci.
_____	Sci. - Tech.
_____	Stat. - Mar.

Preferred Alternative (#2). Presented as the most effective alternative, it also has the highest potential for negative environmental effects, because of the broadcast method and toxicity of poison. Of most concern is the "heavy impact" to the endemic deer mouse population as described, and unknown impacts to various landbirds and invertebrates, some of which may be considered transitional (to full species status). Further, as islands are very sensitive to population changes, even temporary disruptions could produce long-term effects on other members of limited food chains—and/or make a reduced population even more subject to other changes (disease, climate, etc.). Without much (or any?) research on the effects of brodifacoum on associated endemic and other species, it may not be prudent to experiment to this extent on Anacapa Island.

Toxicity of poisons. While the half-lives of the proposed rodenticides are given in a chart, there is little discussion of "persistence." How long will each poison be toxic? Will the poisons break down to toxic or non-toxic byproducts? Will this occur at a constant rate or differential, when exposed to rain, seawater, or dry conditions? If the pellets fall in places not exposed to rain, how long could they persist? (Our concern, of course, is the continued poisoning of non-target species subsequent to the initial die-off.)

Unknown variables and issues of concern:

- With invertebrate poison consumption causing transport into narrow food chains, secondary and tertiary poisonings and their persistence may be untraceable and/or unable to be mitigated.
- Little or no research is given charting effects of poisons on herpetofauna.
- An assumption presented, that rats would consume most or all of the bait present, out-competing the mice, appears overly optimistic and is not backed by hard data. Especially if brodifacoum is used, rats may ingest very little compared to non-target species.

A1: The impacts to invertebrates has been adequately described (p. 66) for various species. Invertebrates do not have a Vitamin K dependent blood clotting system and therefore are not believed to be negatively impacted by the anticoagulant rodenticides.

Landbirds: The risk analysis for landbirds evaluated the potential for primary and secondary exposure (p. 69). The risk analysis grouped landbirds primarily by foraging strategy which is the primary risk evaluation tool as it determines risk of primary or secondary hazards. Included was a summary of studies completed that documented no landbirds were interested in placebo bait pellets presented. There are no landbirds endemic to Anacapa Island, however, there are endemic subspecies that exist on Anacapa and the other much larger and diverse Park islands (San Miguel, Santa Rosa, and Santa Cruz Islands) and the other Channel Islands (Diamond and Jones 1980, Johnson 1972). Of the eight endemic avifauna found on Anacapa, all are also found on at least one or all of the Channel Islands. Adequate mitigation, such as timing of operation, color of bait pellets, size of bait pellets and formulation of bait pellets will be adopted to minimize risk of rodenticide exposure.

A2: All acute toxicity data is presented in the EIS. No toxicity data exists for many species found on Anacapa Island. For risk evaluation, it is common practice by the US EPA to utilize data from species representative of specific groups eg., Passerines, upland gamebird, and waterfowl. It is impossible to predict the response of any species to a pesticide without data from that species. It is logistically and financially infeasible to collect laboratory toxicology data on every individual species. The data presented allows an evaluation of the relative risks. Wherever possible, we utilized statistical data from the literature that more accurately estimated the acute toxicity of the rodenticides to birds. The data presented then allows for inferences to be drawn about the relative risks and response that could be expected.

A3: The AIRP focuses on restoring seabird nesting habitat. The benefits extend not only to seabirds, but also to landbirds, the Deer Mouse, invertebrates (terrestrial and marine), and plants through relief from predation pressure from rats. Rats on Anacapa Island have altered the ecosystem and are responsible for extirpating seabirds and other species from the island (eg. the 20 year absence of the Deer Mouse from East Anacapa Island). Worldwide, introduced rats appear to be responsible for about 50% of all bird and reptile extinctions. Anacapa Island may be a "sink" to many species because of the presence of rats. Some species are likely kept at a chronically low level, presenting a risk of susceptibility to environmental changes. The removal of rats will greatly benefit these groups of species. There are no endemic species, except for the Deer Mouse, on Anacapa Island that are at risk of rodenticide exposure. All impacted species will likely recover to pre-eradication levels or greater. For those species that are being heavily impacted by rats (seabirds, landbirds, invertebrates), their numbers will increase rapidly post eradication, and likely will exceed the pre-eradication levels. (continued next page)

A8 { **Aerial broadcast.** This method as described did not address various issues. Will *roosting* pelicans be exposed to the bait or the effects of low-flying helicopters? If most rats live on the cliffs, and bait placement is proposed as “trickling from above and hand-placed from below,” then couldn’t the baiting be accomplished completely by hand or in bait-stations (so as to further minimize marine and non-target effects)? Are rats living on offshore rocks? (If undetermined, study should substantiate rat presence so as to minimize unnecessary broadcast and resultant disruption to roosting/nesting seabirds and marine ecosystem.)

A11 { If brodifacoum is used, Appendix C appears to indicate it has been effectively applied most often with ground applications. Because aerial application has apparently not been tested much (with actual attempts for either method not listed), and Anacapa’s ecosystems highly sensitive due to the small size of the island, ground application with bait stations would preserve more non-target species.

A13 { **Migrations.** There appears to be no proposal for aggressively controlling possible rat migration from Middle and West Anacapa to East Anacapa, during the year after the initial broadcast/baiting on East Anacapa. Has the placement of traps or bait stations along migration points been considered? (Monitoring alone doesn’t seem the best solution if no plan for containment is in place.)

A14 { **Emergency Response Plan.** As outlined in various sections and Appendix A, the park’s response to new rat introductions should be fully developed and implemented prior to any eradication efforts, including guaranteed funding and personnel to prevent future infestations. Prevention standards and strategies (outlined on pg. 4) are recommended for all islands regardless of the outcome of this project.

A15 { **Conclusion.** A safer alternative than preferred #2 should be strongly considered, utilizing less-toxic poisons and methods of application. Aerial broadcasting of brodifacoum presents the highest risk of widespread and persistent contamination of Anacapa ecosystems, with many effects and variables unknown from the research cited. Bait stations present the least-risky method even though they require more maintenance and present other possible impacts, including logistical. Whichever methods and baits are chosen, all mitigations proposed in the DEIS, especially those to protect the deer mice, should be enacted prior to application.

Please respond to the above address, and thank-you for considering these comments.

Sincerely,



Neil Ziegler, President
Ventura Audubon Society

A3 continued: The susceptibility to the rodenticide, followed by a recovery to levels higher than measured pre-eradication has been documented in New Zealand and elsewhere after rat eradication. The benefit of the eradication clearly outweighs the risk of rodenticide exposure.

A4: A discussion of persistence requires an analysis of the temporal and spatial availability of the rodenticide. The temporal availability of the rodenticides has been discussed on pages 61 and 64. The spatial availability of the rodenticide is only relevant if it is available to be consumed/absorbed by a biological organism susceptible to the chemical. Any residual bait that is not degraded due to rainfall, or heavy moisture will be susceptible to microbial degradation. There are no toxic metabolites. The rodenticide itself will bind strongly to organic matter in the soil where microbial degradation will expedite the detoxification process reducing the rodenticide to its base components of carbon dioxide and water. The binding to soil will lock the rodenticide, making it biologically unavailable to birds and mice. In the very extreme case of bait entering and residing unconsumed in a dry location on the island, the bait will still be susceptible to microbial degradation. There will not be any bait available in dry locations to be of biological significance to any population. These dry habitats, such as caves, are also good habitat for rat and mouse burrows and any bait found in these areas will likely be the first pellets to be consumed.

A5: The analysis focussed on primary and secondary poisoning. Tertiary poisoning is possible; however, very little study has been reported in the scientific literature. Studies have documented that invertebrates consuming the bait will test positive for the rodenticide so long as the bait is present in the gut of the organism. No rodenticide residue will likely be bound within invertebrates once the bait is excreted, thus, presenting a very low risk of moving the rodenticide into the food chain over the long term. The rodenticides appear to not persist in invertebrate tissue (Pain et al. 2000).

A6: The known ecotoxicology data for herpetofauna was presented in the EIS (pg. 67). There are plans to monitor the herpetofauna population to evaluate the potential toxicological effects. Although there may be some impacts to herpetofauna, there is evidence to suggest that removal of rats will cause increase in the herp population to levels higher than pre-eradication (Merton 1987). Rats are known to prey on the herpetofauna of Anacapa Island and the population may be chronically suppressed because of the rats. In other words, it is expected that the herpetofauna population will rebound and increase to levels higher than currently found on Anacapa Island.

(Continued next page)

A7: Rats prey on the Anacapa Deer Mouse and were believed to be responsible for the 20 year extirpation of the Deer Mouse from East Anacapa Island. Rats preyed on and out competed the mice for resources on the island. The bait, formulated for rodents, will be highly palatable to both the rats and mice. Rats will be competitively dominant for the resource. Sowing rates have been optimized such that very little if any bait will be remaining after application and once rats and mice have removed the bait.

A8: Although pelicans may be roosting on the island during the non-breeding season, it is anticipated that the pelicans may temporarily use alternate roost sites on other islands during the period of helicopter activity. There will be no direct effect of the rodenticide bait on the pelicans since they are fish eaters. There is no likelihood that they will ingest any bait directly, or secondarily from contaminated prey. The bait will be in a pellet form and is not expected to adhere to bird feet or feathers, therefore, it is unlikely that pelicans will inadvertently ingest the pellets during preening activities. Pelicans are not scavengers and will not eat dead and poisoned rodents. (It is expected that most (87-100%) of rodents will die underground after consuming the bait.) Pelican prey species are schooling fish such as anchovies and sardines, species which will not come into contact with the bait.

A9: The reasons for the methodology have been outlined in Chapter Two. The reasons for not pursuing placement of bait stations across the whole island are described on page 26.

The hand placement of baits from above and below, alone would not accomplish the purpose and need. Hand distribution of bait would not meet the basic requirement that bait be delivered in every rat's territory. Personnel would be required to stand precipitously close to the edge of the cliff. The cliff edges are extremely unstable and present a significant hazard to personnel. Daily orientation visits for visitors to Anacapa include a discussion of the necessity of avoidance of cliff edges because of the danger. Similarly, all cliff faces are not accessible. The cliffs rise 60 m to almost 300 m on West Island. There is no guarantee that by hand baiting, enough bait could be placed in high enough concentration on the cliff side to meet the purpose and need.

A10: Rats do exist on the offshore rocks (G. Howald, pers. obs.). The offshore rocks are close enough to the Anacapa Islands that rats could easily swim the distance to the island. Thus, if the offshore rocks are not treated, there would be an unacceptably high risk of rats re-invading the island negating the investment in eradicating the rats.

A11: Aerial application of rodenticides for rodent control to protect endemic and native birds is a tool being pursued in Hawaii. Island rat eradications using the aerial broadcast of rodenticides have been carried out over many islands including in New Zealand and elsewhere in the world. The aerial broadcast of pesticides is common on agricultural lands on the mainland in Southern California. The preferred aerial applicator is an experienced agricultural aerial pesticide applicator, certified by the State of California.

A12: The reason for not pursuing bait stations on Anacapa Island has been outlined on page 26. The relative risk of non-target exposure to the rodenticides would be less with bait stations, however, it is technologically infeasible to place bait stations on the cliffsides. Baiting the cliffsides is necessary to meet the purpose and need of the project.

A13: In May 2000, studies were initiated to evaluate if rats would cross the channel between East and Middle Island. Rats from Middle and East Island were live trapped, fitted with a radio collar, and released in the channel, on the opposite island from which they were captured. After 3 months, no rat has been detected to cross the channel. Nonetheless, we recognize that rats re-invading East Island is a possibility. Re-invasion prevention is outlined in response D3.

A14: The Park fully understands the ecological implications of introductions of non-native plants and animals to Park islands. It is further understood that eradication should not be pursued without a prevention program in place to keep re-introductions from occurring. The Park is committed to fully implementing all aspects of the prevention plan (as described on pages 17) prior to the completion of rat eradication on Anacapa Island. Many aspects of the prevention plan, including public education and rodent proofing the Park's departure points will be implemented prior to Fall, 2001.

A15: The purpose and need require that rats be eradicated from Anacapa Island. The preferred alternative offers the highest probability of successfully meeting the stated objective. The use of a lesser toxic compound would result in a lower probability of achieving eradication. These lesser toxic compounds are valuable for control purposes, where they could be used chronically. However, control would require long term use of the rodenticides, which could result in greater impacts to non-target species than if the preferred action were adopted in the first place. This project is proposing a one time use of the rodenticide, and would not require re-treating. There will be no long term deleterious effects from the use of the rodenticide. Many species impacted by the rodenticide will rebound to pre-eradication levels and in some cases, exceed the levels found before eradication due to release from rat predation.

A16: As written in the FEIS, ensuring the viability of the Anacapa Deer Mouse is a necessary action.